

## 2B. LEADING CAUSES OF DEATH

### CAUSES WITH THE GREATEST NUMBER OF DEATHS

The leading cause of death to Arizona residents in 1999 continued to be *heart disease*, which accounted for 10,335 or 26.1 percent of all deaths (**Figure 2B-1, Table 2B-1, Table 5E-14**). *Cancer* remained the second most frequent cause of death to residents of the state, being responsible for 22.3 percent of all deaths in 1999. The third leading cause of death, *chronic obstructive pulmonary disease*, accounted for 2,499 or 6.3 percent of total deaths. Together, these three causes accounted for 54.7 percent of total deaths in 1999.

Deaths due to *cerebrovascular disease (stroke)* ranked fourth in 1999, with 2,395 resident deaths reported. In 1999 COPD accounted for 5.8 percent of all deaths.

Deaths due to *unintentional injuries* were the fifth leading cause of death in 1999.

The causes ranked sixth through ninth in 1998 were *pneumonia and influenza, diabetes, suicide* and *Alzheimer's disease*. The number of deaths from *Alzheimer's disease* increased 2.7 times from 205 in 1989 to 553 in 1999 (**Table 2B-1**).

*Homicide*, the 10<sup>th</sup> leading cause, continued a downward trend observed since 1996 (**Table 2B-1**).

For the third consecutive year, *human immunodeficiency virus infection (HIV*

*infection)* stayed off the list of the 12 leading causes of death in Arizona.

### MORTALITY RATES FOR THE LEADING CAUSES OF DEATH

For most leading causes of death, age-adjusted death rates are better indicators than crude death rates. Therefore, all death rates presented in this section are age-adjusted. They were computed by the direct method, that is by applying the age-specific death rates to the U.S. standard population (relative age distribution of the 1940 enumerated population of the United States). Because mortality from most causes occurs predominately among the elderly, a population group with a larger proportion of older persons would have a higher mortality rate. The "age-adjustment" or age-standardization" removes the effects of the age differences among gender/ethnic groups by placing all of them in a population with a standard age distribution. However, the age-adjusted mortality rates should be viewed as an index rather than as actual measures of mortality risk. Statistically, they are weighted averages of the age-specific death rates, where the weights represent the fixed population proportions by age (see *Terms Related to Mortality* in Technical Notes). It is important not to compare age-adjusted death rates with crude rates. The age-adjusted mortality rates are not shown for causes from which deaths occur primarily among infants (such as certain conditions originating in the perinatal period or congenital anomalies).

#### ■ Diseases of the heart

Mortality rate from diseases of the heart declined in Arizona for the sixth consecutive year from the rate of 155.0 in 1993 to 120.9 in 1999 (**Figure 2B-2,**

**Table 2B-2).** The 1999 female rate of 96.0/100,000 and the male rate of 149.1/100,000 were the lowest gender-specific rates of the eleven-year period from 1989 to 1999 (**Table 2B-3**). However, the overall improvement in survival chances from heart disease was greater for males than females. The male to female differential in mortality rate for diseases of the heart narrowed from 66 percent greater in 1989 to 55 percent greater in 1999. Black residents of Arizona were 3.8 times more likely to die from diseases of heart in 1999 than Asians who were at the lowest risk of death from diseases of the heart among ethnic groups in Arizona (**Table 2B-5**).

### ■ Malignant neoplasms (cancer)

The 1999 cancer death rate of 113.1 was the lowest of the 11-year period from 1989 to 1999 (**Table 2B-2**). Cancer mortality rates have improved for both males and females in Arizona (**Figure 2B-3, Table 2B-3**). In 1998, cancer was a 31 percent greater risk for Arizona males than females. Arizona's Blacks were 2.3 times more likely to die from malignant neoplasms in 1999 than Asians, the group at the lowest risk of cancer death among ethnic groups (**Table 2B-5**).

*Lung cancer* accounted for 31.5 percent of all cancer deaths among males compared to 26.6 percent among females (**Table 2B-4**). *Breast cancer* accounted for 15.9 percent of all female cancer deaths in 1999. *Cancer of prostate* was responsible for 10.3 percent of all male cancer deaths. *Colorectal cancer* was the third leading cause of cancer mortality among both males (9.3 percent) and females (9.1 percent).

Death rates for specific cancers vary considerably across ethnic groups

(**Figure 2B-4**). Compared with American Indian residents of Arizona, *lung cancer* death rates were 4.5 times higher among Blacks. The 1999 age-adjusted mortality rate for *breast cancer* among Black females (24.8/100,000) was 3.1 times greater than the *breast cancer* death rate among Asian females (**Figure 2B-4**). The age-adjusted death rate for prostate cancer among Black males was 3.2 greater than the rate among Asian males.

### ■ Unintentional injuries

The mortality rate for unintentional injuries declined by 4.8 percent from 41.8 deaths per 100,000 population in 1998 to 39.8/100,000 in 1999. In 1999, male compared to female residents of Arizona were 2.5 times more likely to die from unintentional injury (**Figure 2B-5, Table 2B-3**).

The motor vehicle fatality rate declined by 6.2 percent, from 21.0/100,000 in both 1997 and 1998 to 19.7/100,000 in 1999. The motor vehicle fatality rate for Arizona males in 1999 was 27.6/100,000, 16.4 percent lower than the 1989 rate of 33.0/100,000 (**Figure 2B-6, Table 2B-3**). The 1999 female rate for motor vehicle-related fatal injuries was almost identical with the 1989 rate (11.6 and 12.0 respectively). The American Indian death rate for motor vehicle injuries (71.5/100,000) was 5 times higher than the rate for Asians (14.3/100,000) (**Table 2B-5**).

Fifty-one of 100 Arizonans fatally injured in 1999 did not incur that injury in a motor vehicle collision. Again, the American Indian death rate for injuries not related to motor vehicles (50.0/100,000) was 8.8 times the rate of Asian residents of Arizona (5.7/100,000), and was the highest rate among ethnic groups (**Table 2B-5**).

### ■ Cerebrovascular disease (stroke)

Cerebrovascular disease and diseases of the heart are two of the leading causes of death that share many risk factors such as hypertension, smoking, obesity and high levels of cholesterol. From 1998 to 1999, the mortality rate for stroke decreased among both males and females in Arizona (**Figure 2B-7, Table 2B-2**). The 1999 female mortality risk for a stroke death (26.6/100,000) exceeded the male risk (24.9/100,000) by 6.8 percent (**Table 2B-3**). Compared to Arizona's rate, Blacks were 20 percent more likely to die from cerebrovascular disease in 1999 (**Figure 2B-7, Table 2B-5**). The 1999 mortality rate for cerebrovascular disease among Asians (16.2/100,000) was the lowest among racial/ethnic groups.

### ■ Chronic obstructive pulmonary disease (COPD)

Mortality rate for COPD has held steady in Arizona between 1994 and 1996, then it increased in 1997 and declined again both in 1998 and 1999 (**Table 2B-2**). Death rates from emphysema, chronic bronchitis, asthma and other obstructive lung disorders were substantially higher among non-Hispanic whites (30.5/100,000) than they were among Blacks (21.9), American Indians (11.5), Hispanics (10.2) and Asians (7.1/100,000) (**Table 2B-5**). The temporal trends in COPD death rates differed for the two genders, increasing by 13.6 percent for females and decreasing by 8.5 percent for males. Still, Arizona males in 1999 were 24.4 percent more likely to die from COPD than Arizona females (**Figure 2B-8, Table 2B-3**).

### ■ Pneumonia and influenza

The mortality rate for pneumonia and influenza increased for the second

consecutive year from 16.1 in 1997 to 17.7 in 1998 and 19.7 in 1999, the latter being the highest rate of the period from 1989 to 1999 (**Table 2B-2**). The pneumonia and influenza mortality disadvantage of Arizona males compared to females broadened from 16 percent greater in 1998 to 33.4 percent greater in 1999 (**Figure 2B-9**). The highest mortality rates among ethnic groups from pneumonia and influenza in 1999 were those of American Indians (35.4/100,000) compared to 8.4 among Asians, 15.0 among Hispanics, 19.4 among non-Hispanic whites and 20.0 among Blacks, (**Table 2B-5**).

### ■ Suicide

From 1992 to 1994, the suicide death rate increased (**Table 2B-2**) by 25.8 percent to the highest level since at least 1970. It has declined by 2.5 percent in 1995 and by an additional 16.4 percent in 1996. From 1997 to 1998 the suicide death rate remained practically unchanged (16.9/100,000 and 17.0/100,000 respectively). Between 1998 and 1999 the Arizona suicide mortality rate declined by 14.1 percent to 14.6 suicides per 100,000 persons, the lowest rate of the last two decades.

In the 1989-1999 period, no suicide death rate among Arizona's males was below 23.3/ 100,000 (**Figure 2B-10, Table 2B-3**). In contrast, none of the annual female death rates from suicide exceeded 8.4/100,000 during that period. Males relative to females in 1999 were 4 times more likely to kill themselves. Suicide rates in 1999 were substantially higher among American Indians (18.2/100,000) than they were among non-Hispanic whites (15.1/100,000), Blacks and Hispanics (10.6/100,000) and Asians (6.4/100,000) (**Table 2B-5**).

## ■ Diabetes

The number of deaths from diabetes almost doubled from 541 in 1990 to 1,046 in 1999 (**Table 2B-1**). The death rate from diabetes remained virtually unchanged in Arizona between 1996 and 1997, but it increased to 13.5/100,000 both in 1998 and 1999 (**Table 2B-2**). The increase from 1989 to 1999 in the death rate from diabetes was 9 times greater for males than females (24.0 and 2.6 percent respectively) (**Figure 2B-11**).

Diabetes was, in 1999, the fourth leading cause of death among American Indians and Hispanics, seventh among Blacks and Asians and eighth among white non-Hispanics (**Table 2B-5**). The age-adjusted mortality rates from diabetes among American Indians were 8.9 times higher than the rate for Asians and 5.5 times as high as the diabetes death rates of non-Hispanic whites (**Table 2B-5**).

## ■ Homicide

Arizona experienced five consecutive annual increases in homicide mortality from 1990 to 1995 (**Table 2B-2**). From 1995 to 1999, the homicide mortality declined by 29.6 percent to a rate of 10.0/100,000. However, the number of Arizonans who were murdered remained similar in 1997, 1998 and 1999. The homicide death rate among Arizona females increased from 4.7/100,000 in 1998 to 4.9/100,000 in 1999. The homicide death rate among Arizona males declined from 15.9 in 1998 to 14.7 in 1999 (**Figure 2B-12, Table 2B-3**).

The 1999 homicide rates were substantially higher among Black, American Indian and Hispanic residents of the state compared to homicide rates among non-Hispanic whites and Asians.

Blacks were 5.3 times more likely, while American Indians 4.6 times and Hispanics 3.9 times more likely to die from homicide than non-Hispanic whites (**Table 2B-5**).

## ■ Alcoholism

The 1999 death rate for alcoholism was 6.9 deaths per 100,000 (age-adjusted) population, 10.4 percent lower than the rate of 7.7/100,000 in 1998. Based on the age-adjusted mortality rate, alcoholism was the 10<sup>th</sup> leading cause of death in Arizona in 1999. Based on the number of deaths, alcoholism was not among the twelve leading causes of death (**Figure 2B-1**).

Arizona males were 2.9 times more likely to die in 1999 from alcoholism than Arizona females (10.5/100,000 vs. 3.6/100,000) (**Figure 2B-13, Table 2B-3**). The 1999 death rate for alcoholism among American Indians (40.5/100,000) was 40 times greater than the rate among Asians (1.0/100,000) (**Table 2B-5**).

## ■ Alzheimer's Disease

The number of deaths from Alzheimer's disease in Arizona in 1999 made Alzheimer's disease the 9<sup>th</sup> leading cause of death for all age groups and 8<sup>th</sup> leading cause for persons 65 years of age or more (**Figure 2B-1, Table 2B-1, Table 2C-27**). A year before, in 1998, Alzheimer's disease replaced homicide as the 10<sup>th</sup> leading cause of death in the State. The number of deaths from Alzheimer's disease increased 2.7 times from 205 in 1998 to 553 in 1999. The age-adjusted mortality rate for Alzheimer's disease increased by 77 percent from 3.1/100,000 in 1989 to 5.5/100,000 in 1999 (**Figure 2B-14**).

For each of the 12 leading causes of death except stroke and Alzheimer's disease, age-adjusted mortality rates for males were higher than for females. The age-adjusted death rate for Alzheimer's disease was 57 percent higher in 1999 for females (6.6/100,000) than for males (4.2/100,000).

### ■ Nephritis, Nephrotic Syndrome and Nephrosis

Based on both the number of deaths and the age-adjusted death rate, kidney disease (nephritis, nephrotic syndrome and nephrosis) was the 12<sup>th</sup> leading cause of death in Arizona in 1999 (**Figure 2B-1**). The number of deaths from kidney disease increased by 59.3 percent from 263 in 1989 to 419 in 1999 (**Table 2B-1**).

The male to female relative disadvantage of dying from kidney disease declined between 1989 (a 47 percent higher mortality risk among males) and 1995 (a 7.5 percent higher), but it has increased again, and in 1999 the mortality rate for males exceeded the female death rate by 43 percent (**Figure 2B-15**).

The 1999 nephritis death rates were substantially higher among American Indian (14.9/100,000) and Black residents (12.1/100,000) of the state compared to nephritis rates among Hispanics (6.7/100,000), non-Hispanic whites (4.3/100,000) and Asians (3.1/100,000). American Indians were 4.8 times more likely, while Blacks 3.9 times more likely to die in 1999 from nephritis than Asians.

### ■ HIV Infection

In each year from 1989 to 1999, Arizonans compared to their national peers were less likely to die from HIV infection (**Table 2B-2**).

Among the leading causes of mortality, the largest decline in the number of deaths was noted for HIV infection; from 530 deaths in 1995 to 143 deaths in 1998 and 147 deaths in 1999.

The rate of deaths from HIV infection in Arizona showed a sharp decline by 77 percent from 12.6/100,000 in 1995 to 8.4/100,000 in 1996, 4.2/100,000 in 1997, 3.0/100,000 in 1998 and 2.9/100,000 in 1999 (**Table 2B-2**). In 1999, Arizonans were 2.3 times more likely to die from blood infection or septicemia (334 deaths), than from HIV infection (147 deaths, **Table 1B-1**).

The age-adjusted death rate for HIV infection among Arizona males declined by 77.6 percent from 22.8/100,000 in 1995 to 5.1/100,000 in 1999. The age-adjusted death rate for HIV infection among Arizona females declined by 69.6 percent from 2.3/100,000 in 1995 to 0.7/100,000 in 1999 (**Figure 2B-16**).

The age-adjusted HIV infection death rate for Arizona Black residents was 8.1/100,000, 3.4 times greater than the rate of 2.4/100,000 among non-Hispanic whites. American Indian residents of Arizona in 1989 were 4.3 times more likely to die from septicemia (16.9/100,000) than HIV infection (3.6/100,000).